BUDNIKOV, P.P., akademikus (Moscow)

Improvement of porcelain manufacture. Epitoanyag 12 no.7:244-246 Jl '60.

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307310008-9"

BUDNIKOV, P.P.; VOLODIN, P.L.; TRESVYATSKIY, S.G.

Ivestigating the clinkering and recrystallization of pure magnesium oxide. Ogneupory 25 no.2:70-73 '60. (MIRA 13:10)
(Magnesium oxide) (Crystallization) (Clinker brick)

BUDNIKOV, P.P.; VOROB'YEV, Kh.S.

Investigating properties of portland cements with a high percentage of magnesium oxides. TSement 26 no.1:14-21 Ja-F '60. (MIRA 13:5)

(Portland cement)

BUDNIKOV, P.P.; GORSHKOV, V.S.

Hydrated synthetic minerals of alumina slags. Ukr. khim. zhur. 26 no.4:523-530 '60. (MIRA 13:9)

1. Moskovskiy khimiko-tekhnologicheskiy institut im. D.I. Mendeleyeva. (Calcium aluminate) (Calcium aluminosilicate)

BUDNIKOV, P.P.

Seventh International Congress on Ceramics. Vest.AN SSSR 30 no.12: 81-82 D '60. (MIRA 13:12)

1. Chlen-korrespondent AN SSSR.
(Ceramics—Congresses)

BUDNIKOV, P.P.; GORSHKOV, V.S.

Hydration of dicalcium ferrite. Zhur. prikl. khim. 33 no.6:1246-1251 Je '60. (MIRA 13:8)

(Calcium ferrate)

83973

S/080/60/033/009/001/021
A003/A001

18.1215 only 2308

26.2240

AUTHORS: Budnikov, P.P., Belyayev, R.A.

TITLE: Beryllium Oxide and Its Properties

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol. 33, No. 9, pp. 1921-1940

TEXT: Beryllium oxide has a high refractoriness, favorable nuclear properties and a good resistance to heat impact which make it suitable as structural material in nuclear, especially high-temperature, reactors. Its relatively low vapor pressure permits it to be used in the vacuum technology at temperatures of up to 2,000°C. The refractive index, microhardness, volumetric weight, thermodynamic properties, etc were studied earlier (Refs 1, 3, 11, 16-19). The resistance of BeO to stretching is lower than to compression (Tables 9-10, Figures 4-6). Articles made from BeO show a thermoplastic flow ("creep") starting from a temperature of 1,000°C. BeO has a high specific electric resistance combined with a high heat conductivity. At 630°C the electric resistance is $3.85 \cdot 10^8 \Omega \cdot$ cm, at 1,000°C $5.2 \cdot 10^6 \Omega \cdot$ cm (Ref 3). The magnetic susceptibility of BeO is zero. The dielectric constant at room temperature is 7.35. The high heat-resistance of BeO can be increased still further by adding 0.5% of a mixture of aluminum

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Beryllium Oxide and Its Properties

oxide and zirconium oxide. It has been shown that the effect of radiation on BeO decreases with rising temperature. Among highly-refractive oxides BeO is one of the least volatile. Its volatility can be decreased still further by adding oxides of low volatility, like those of magnesium, calcium, strontium, barium, aluminum and silicon. This is explained by the formation of isomorphous and chemical compounds between the oxides and BeO. Beryllium oxide does not interact with hydrogen peroxide, SO_2, sulfur, bromine, and iodine. Below 700°C there is no interaction with CS_2. Gaseous hydrogen halides do not react with calcinated BeO even at red heat. Beryllium oxide is easily dissolved in molten alkalis, alkali carbonates and pyrosulfates. It is resistant, however, to alkaline solutions. The reduction of BeO by carbon is the most difficult of all oxides. Under neutral or reducing conditions BeO is resistant to the action of iron or similar metals. Besides BeO the oxide Be_2O is known which is stable under normal conditions. The only chemical compound in the system BeO-SiO_2 is phenacite (Be_2SiO_4) which is dissociated to BeO and SiO_2 at 1,560°C. The following binary systems were studied: BeO-TiO_2 (Ref 49), BeO-Al_2O_3 (Ref 48), BeO-UO_2 (Ref 53), BeO-Cr_2O_3 (Ref 55) and various ternary systems (Refs 49, 50, 54, 57, 58, 59). BeO like all other Be compounds, is highly toxic, especially in highly

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S/080/60/033/009/001/021
A003/A001

Beryllium Oxide and Its Properties

dispersed form, like fumes.. There are 17 figures, 23 tables and 61 references: 21 Soviet, 18 English, 15 American and 7 German.

SUBMITTED: April 25, 1960

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BUDNIKOV, P.P.; KRAVCHENKO, I.V.

Phenomenon of expansion and strength faults in the setting of cements. Zhur. prikl. khim. 33 no.11:2389-2399 N '60. (MIRA 14:4)

(Cement)

S/076/60/034/009/022/0..
B015/B056

AUTHORS: Galinker, I. S., Urazovskiy, S. S., Budnikov, P. P.,
Kadaner, L. I., Gorbanev, A. I.

TITLE: Andrey Nikitich Sysoyev (1901-1959)

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 9,
pp. 2130-2133

TEXT: An obituary note is given in honor of the Head of the kafedra elektrokhimicheskikh proizvodstv Khar'kovskogo politekhnicheskogo instituta im. V. I. Lenina (Chair of Electrochemical Products of the Khar'kov Polytechnic Institute imeni V. I. Lenin), Professor A. N. Sysoyev, who died on January 4, 1960. Following the obituary, a list of the scientific works published by him is given. In 1926, the deceased finished his studies at the Khar'kovskiy tekhnologicheskiy institut (Khar'kov Technological Institute). From 1924 to 1925 he worked with Professor A. N. Shchukarev on "Electrolysis Without Electrodes by Means of a Spark Gap", on which occasion several experiments made by Professor L. Pisarzhevskiy were repeated, and as a result of the contra-

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Andrey Nikitich Sysoyev (1901-1959)

S/076/60/034/009/022/022
B015/B056

dictory results obtained by the student A. N. Sysoyev and Professor Pisarzhevskiy, a controversy followed, in the course of which the latter was proved to be right. The work mentioned was published in the Ukrainskiy khimicheskiy zhurnal. A. N. Sysoyev's research field was manifold; thus, he investigated the carbon-oxygen element, the effect of a magnetic field upon the course of chemical reactions, the properties of liquid CO_2 as a solvent, as well as various semiconductor properties. Sysoyev lectured on the results he obtained by his experiments in the latter field, and also published his works. Academician A. F. Ioffe described the deceased as one of the leading scientists of the USSR in the field of chemistry and technology of solid rectifiers. During World War II, A. N. Sysoyev occupied himself with the study of raw materials from Central Asia; thus, industrial plants for the production of calcium carbide, phosphorus, and slag wool were established under his supervision in Uzbekistan. In the last years of his life, Sysoyev occupied himself with electroplating and investigated the structure of various metal deposits. There are 1 figure and 59 Soviet references.

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S/020/60/134/002/038/041XX
B016/B067

AUTHORS: Budnikov, P. P., Corresponding Member of the AS USSR and Mchedlov-Petrosyan, O. P.

TITLE: On the Thermodynamics of the Change of Kaolinite on Heating

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 2, pp. 349-350

TEXT: The authors report on the study of the thermodynamical changes of kaolinite on heating. Up to now they have been using the data for metakaolinite ($\Delta H_{298.16^oK}$ = —767 500 cal/mole, $\Delta Z_{298.16^oK}$ = -719 410 cal/mole) for calculating the transformation reactions of kaolinite. In this case, the formation of mullite is the most probable in the entire temperature range (ΔZ_{1000^oK} = -104 740 cal/mole, ΔZ_{1600^oK} = -92 240 cal/mole). When adding alumina the mullite formation from metakaolinite proceeds with a stronger change of free energy than without alumina addition ($\Delta Z_{1800^oK}^{A_3S_2}$ = -203 020 cal/mole). In this case, mainly mullite (ΔZ_{1800^oK} = -203 020

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cal/mole) is formed, whereas in the formation of sillimanite $\Delta Z^{AS}_{1800^{o}K}$ = -141 220 cal/mole). The authors follow another method of calculation. They proceed from kaolinite (Table 1) by using new data (Refs. 5-7). The thermal capacity of kaolinite was determined from oxides and water by the additive reaction (Ref. 8). On the basis of the data of Table 1 the authors studied the reactions (1) - (4). The calculation of these reactions gives the equations (1) - (4). Fig. 1 shows the results of these calculations. The results obtained by the authors thermodynamically explain for the first time the formation of metakaolinite at about 900°K (600°C). Metakaolinite is not formed at lower temperatures, even not after protracted heating. Since the straight lines for the reactions (2) and (4) (Fig. 1) lie close to each other the authors conclude that sillimanite and mullite may form with almost the same thermodynamical probability. Apparently, the formation of various compounds is determined by kinetic factors, especially by the degree of crystallization of the kaolinite used. The authors maintain that this opinion agrees with the most recent findings (Refs. 9, 10) concerning the change of kaolinite during heating and with their own observations (Ref. 1) as well as with

On the Thermodynamics of the Change of Kaolinite on Heating

S/020/60/134/002/038/041XX
B016/B067

their interpretation of the first exothermic stage (Refs. 1,2). There are 1 figure, 1 table, and 10 references: 4 Soviet, 3 US, and 1 German.

SUBMITTED: May 17, 1960

$$Al_2O_3\cdot 2SiO_2\cdot 2H_2O \rightarrow Bl_2O_3\cdot 2SiO_2 + 2H_2O \text{ пар; (vapor)} \quad (1)$$

$$Al_2O_3\cdot 2SiO_2\cdot 2H_2O \rightarrow Al_2O_3\cdot SiO_2 + SiO_2 + 2H_2O \text{ пар;} \quad (2)$$

$$Al_2O_3\cdot 2SiO_2\cdot 2H_2O \rightarrow \alpha Al_2O_3 + 2SiO_2 + 2H_2O \text{ пар;} \quad (3)$$

$$Al_2O_3\cdot 2SiO_2\cdot 2H_2O \rightarrow \frac{1}{3}(3Al_2O_3\cdot 2SiO_2) + \frac{4}{3}SiO_2 + 2H_2O \text{ пар.} \quad (4)$$

$$\Delta Z = +80814 - 11,72T\cdot \ln T + 10,69\cdot 10^{-3}T^2 - 2,27\cdot 10^5 T^{-1} - 22,6T; \quad (1)$$

$$\Delta Z = -9605 - 10,33T\cdot \ln T + 7,99\cdot 10^{-3}T^2 + 3,38\cdot 10^5 T^{-1} - 26,02T; \quad (2)$$

$$\Delta Z = +35964 - 6,74T\cdot \ln T + 5,36\cdot 10^{-3}T^2 + 2,92\cdot 10^5 T^{-1} - 46,4T; \quad (3)$$

$$\Delta Z = -26712 + 0,09T\cdot \ln T + 6,3\cdot 10^{-3}T^2 + 1,95\cdot 10^5 T^{-1} - 93,85T. \quad (4)$$

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B016/B067

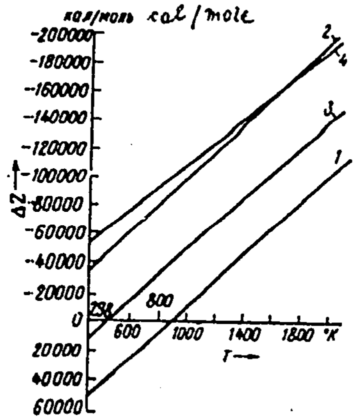

Рис. 1

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BUDNIKOV, P.P.; ROYAK, S.M.; LOPATNIKOVA, L.Ya.; DMITRIYEV, A.M.

Composition and stability of calcium hydrosilicates subjected to hydrothermal treatment at 700 atm. and 200 C. Dokl. AN SSSR 134 no.3:591-594 S '60. (MIRA 13:9)

1. Chlen-korrespondent AN SSSR (for Budnikov).
(Calcium silicate)

BUDNIKOV, P.P.; GINSTLING, A.M.; GOMOZOVA, N.A., red. izd-va; RUDAKOVA, N.I., tekhn. red.

[Reactions in mixtures of solids] Reaktsii v smesiakh tverdykh veshchestv. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 422 p. (MIRA 14:8)

(Solids) (Chemical reactions)

S/081/61/000/021/049/094
B110/B101

AUTHORS: Budnikov, P. P., Kolbasov, V. M., Panteleyev, A. S.

TITLE: Hydration of aluminum-containing minerals of Portland cement in carbonate microfillers

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1961, 311, abstract 21K307 (Tsement, no. 1, 1961, 5 - 9)

TEXT: If C_3A and C_4AF are hydrated in the presence of carbonate microfillers (marble, dolomite, magnesite), the products change in their phase composition. The resulting new crystalline phase is a product of the chemical interaction between calcium aluminatehydrate and carbonates in aqueous medium, and has been identified as $3\ CaO \cdot Al_2O_3 \cdot 11H_2O \cdot$. The basic phase resulting from the hydration of C_3A with marble and dolomite additions consists of hexagonal crystal hydrates with refractive indices that are characteristic of calcium carboaluminate. These new formations are also found in a hydrated mixture of C_3A and magnesite. The phase prevailing

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S/081/61/000/021/049/094
B110/B101

Hydration of aluminum-containing minerals....

in the hydration of C_4AF with microfillers consists of brown isotropic iron hydroxides. Not much of C_3AH_6 is formed, and hardly any at all in mixtures of C_4AF with marble and dolomite. Introducing carbonate micro-fillers raises the strength of C_3A and C_4AF, probably due to the formation of the abovementioned new phases. [Abstracter's note: Complete translation.]

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S/081/62/000/003/047/090
B156/B101

AUTHORS: Budnikov, P. P., Tresvyatskiy, S. G.

TITLE: Procedure for high-temperature thermal analysis of oxide systems

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 3, 1962, 370-371, abstract 3K182 (Poroshk. metallurgiya, no. 1, 1961, 75-81)

TEXT: A procedure is described for the high-temperature thermal analysis of oxide systems. A tungsten-molybdenum thermocouple, with a small molybdenum plate welded to the junction to serve as a crucible for the substances being investigated, is recommended for determining the solidus and liquidus points between 1500 and 2400°C. The furnace used for heating to 2400°C has a heating tube made of electrographite, the tube is fitted with a special system of baffles to develop a circulating flow of inert gas (argon, helium, or pure nitrogen) which is fed into the furnace from above. This baffle arrangement prevents carbonization of the thermocouple and the contents of the crucible from the gaseous phase. The procedure

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S/072/61/000/005/001/001
B105/B226

9.4300 (1145, 1153, 1043)

AUTHORS: Budnikov, P. P., Academician
Kantor, Ya. M.

TITLE: Hardness measurement of electro- and radiotechnical ceramic products

PERIODICAL: Steklo i keramika, no. 5, 1961, 18 - 24

TEXT: This paper presents the results of experiments performed to determine the optimum methods of hardness measurement to be applied in studying the properties of electrotechnical porcelain and high-frequency ceramics. The following methods have been tested: measurement of micro-hardness, static indentation on a Rockwell hardness tester, and measurement by means of sandblast and the method of mutual grinding. The investigations have been carried out with electrotechnical porcelain of zavod "Izolyator" ("Izolyator" Works) (paste M - 23) and zavod "Uralizolyator" ("Uralizolyator" Works) (paste 143 and paste mixed with alumina ГФ (GF)), with steatite ceramic products, i. e., calcium steatite (TK - 21) and barium steatite CK - 1 (SK - 1), with mullite corundum (MK) and corundum

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Hardness measurement ...

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(K) ceramic products. Measurement of microhardness has been performed by means of a ПМТ- 3 (PMT - 3) hardness gauge, the load of the diamond crown amounting to 100 g. Results of measurement are given in Table 1. Tests have been carried out with three highly sintered specimens (water absorption $<$ 0.02%), with a plastic indentation being present. Furthermore, experimental studies for measuring the hardness of ceramic materials by the Rockwell method are described. Three sintered specimens of each material burned under different conditions have been investigated by means of a TK - 2 hardness gauge. The hardnesses of all specimens were determined according to the scales "A", "B", and "C". Table 2 gives the values of hardness of sintered ceramic materials according to Rockwell. Photographs of the crown indents of the hardness gauge on M - 23, MK, and K specimens are described. [Abstracter's note: Photographs of Figs. 1, 2, and 3 are not reproducible.] Hardness data according to scale "B" for all materials exceed the upper limit of scale (100) which is specified by OCT 10242-40 (OST 10242-40). Due to a decrease of sensitivity, the measurement according to scale "B" cannot be recommended for ceramic materials. Due to brittleness, hardness determination of porcelain

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B105/B226

specimens according to scale "C" cannot be performed. When measuring the hardness of steatite and highly aluminous materials according to scale "A", fairly constant results are obtained. Investigations carried out showed that, for determining hardness of electrotechnical porcelain by means of static indentations, a new device of the Rockwell type should be built, having a diamond crown of smaller dimension, a 0.1-mm radius of curvature, and using smaller loads. Attempts of hardness measurements by means of a sandblast have been performed at the Moskovskiy instrumental'nyy zavod "Kalibr" (Moscow Tool Factory "Kalibr"). Results of measurements are given in Table 3. The low sensitivity due to the small excavation depth of some materials is the deficiency of this method. The hardness determination according to the method of mutual grinding has been theoretically founded and experimentally verified by Academician V. D. Kuznetsov. The quantity of the ground-off materials has been converted into volumes (Table 4). The dependence of the hardness of ceramic materials on their open porosity at the end of the sintering period is shown in Fig. 4. The value of specific productivity of the grinding process is regarded as a criterium of the grinding power. Specific productivity q (cm^3/cm^3) $= \frac{Q_1}{Q_2}$, Q_1 denoting the

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grinding productivity in cm^3/min and Q_2 the abrasion of the grinding tool per working cycle. The specimens were ground by means of grinding wheels of the K360M2k (KZ60M2k) profile on a 371M plane grinding machine. Results are given in Table 5. Each of the ceramic materials has its individual optimum method of hardness measurement. For none of the ceramic products, the method of mutual grinding can be considered as to be an optimum. Finally, a systematic determination of hardness as a characteristic of their durability is recommended in studying the properties of ceramic materials. Hardness measurement can also be employed as a rapid method for controlling the sintering of steatite and highly aluminous ceramic products. Hardness may be regarded as an indirect characteristic of the grinding power of ceramic materials. There are 4 figures, 5 tables, and 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: AN SSSR (AS USSR) [Abstracter's note: Name of association was taken from first page of journal.]

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S/072/61/000/005/001/001
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Hardness measurement ...

Legend to Table 1:
a) Material, b) microhardness, kg/mm^2, c) minimum, d) maximum, e) mean;
1) Porcelain M-23; 2) Porcelain 143; 3) Porcelain GF; 4) Steatite TK-21; 5) Steatite SK-1; 6) Mullite-corundum ceramic MK; 7) Corundum ceramic K.

Таблица 1

Материал a	Микротвердость в кг/мм² b	
	c минимальная / d максимальная	e средняя
1 Фарфор М-23	509/896; 566/844; 724/946	632; 688; 795
2 » 143	494/638; 455/589; 494/844	545; 515; 676
3 » ГФ	470/650; 586/850; 480/586	585; 718; 445
4 Стеатит ТК-21	642/824; 572/724; 650/850	735; 690; 792
5 » СК-1	548/841; 509/638; 586/732	753; 585; 674
6 Муллито-корундовая керамика МК	824/1000; 726/948; 754/977	924; 891; 846
7 Корундовая керамика К	814/1223; 896/1530; 1400/1790	1092; 1390; 1580

Table 1

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Hardness measurement ... S/072/61/000/005/001/001
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Legend to Table 2: from a) to e) and from 1) to 7) cf. Table 1; but b) HR_B (scale B); f) HR_c (scale C); g) HR_a (scale A); 8) brittle destruction, g) ditto.

	Материал a	Величина твердости по Роквеллу					
		HR_B (шкала B) b		HR_C (шкала C) f		HR_A (шкала A) g	
		c минимальная / d максимальная	e средняя	c минимальная / d максимальная	e средняя	c минимальная / d максимальная	e средняя
1	Фарфор М-23	117/121; 116/122; 115/120	119,1; 117,9; 118,3	g Хрупкое разрушение		73/79; 71/77; 75/81	76,5; 73; 78
2	» 143	114/121; 116/121; 116/121	117,8; 118,9; 118,3	g. То же		68/82; 72/81; 73/80	74,5; 77; 77
3	» Гф	119/122; 118/123; 118/123	120,7; 120,6; 120,4	»		74/85; 76/83; 72/83	78,6; 78,5; 77,3
4	Стеатит ТК-21	117/124; 116/122; 119/122	121; 119,8; 120,5	40/47; 41/47; 40/47	43,4; 45,5; 43	70/76; 72/77; 72/74	73; 74; 73
5	» СК-1	124/126; 120/122; 120/125	124,5; 121,2; 122	48/51; 46/52; 49/51	50; 47,8; 50	70/82; 73/82; 72/78	77,2; 76,4; 75,6
6	Муллито-корундовая керамика МК	123/125; 125/127; 122/126	124,2; 125,5; 125,2	62/65; 60/63; 61/64	63,7; 61,2; 62,4	82/85; 81/85; 85/85	84,2; 84,3; 85
7	Корундовая керамика К	127/127; 126/129; 125/127	127,1; 127,3; 126,7	67/69; 67/71; 67/71	68; 69,4; 69,3	85/90; 85/89; 85/88,5	88; 87,3; 86,5

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B105/B226

Hardness measurement ...

Legend to Table 3:
b) Value of hardness h, mm;
for the rest cf. Table 1.

	Материал a	Величина твердости h в мм b	
		c минимальная / d максимальная	e средняя
1	Фарфор М-23	$\frac{1,05}{1,15}$; $\frac{1,03}{1,15}$; $\frac{1,0}{1,1}$	1,08; 1,1; 1,03
2	» 143	$\frac{0,95}{1,1}$; $\frac{0,95}{1,1}$; $\frac{1,0}{1,1}$	1,05; 1,0; 1,07
3	» ГФ	$\frac{0,8}{0,9}$; $\frac{0,8}{0,8}$; $\frac{0,8}{0,9}$	0,85; 0,8; 0,82
4	Стеатит ТК-21	$\frac{0,48}{0,52}$; $\frac{0,5}{0,5}$; $\frac{0,5}{0,5}$	0,51; 0,5; 0,5
5	» СК-1	$\frac{0,43}{0,48}$; $\frac{0,47}{0,47}$; $\frac{0,47}{0,49}$	0,46; 0,47; 0,48
6	Муллито-корундовая керамика МК	$\frac{0,1}{0,1}$; $\frac{0,05}{0,1}$; $\frac{0,05}{0,1}$	0,1; 0,08; 0,07
7	Корундовая керамика К	$\frac{0}{0}$; $\frac{0}{0}$; $\frac{0}{0,05}$	0; 0; 0,02

Table 3

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Hardness measurment ...

Legend to Table 4:
b) Coefficient of mutual volume decrease by grinding; for the rest cf. Table 1.

Материал a	b Коэффициент взаимного объемного сошлифовывания: c максимальный / d минимальный	e средний
1 Фарфор М-23	$\frac{1,28}{1,43}$; $\frac{1,23}{1,5}$; $\frac{1,13}{1,46}$; $\frac{1,1}{1,47}$	1,36; 1,35; 1,33; 1,27
2 » 143	$\frac{1,14}{1,41}$; $\frac{1,31}{1,48}$; $\frac{1,21}{1,39}$; $\frac{1,19}{1,4}$	1,22; 1,41; 1,32; 1,3
3 » ГФ	$\frac{0,89}{0,95}$; $\frac{0,85}{0,94}$; $\frac{0,81}{0,91}$; $\frac{0,9}{0,97}$	0,92; 0,88; 0,85; 0,91
4 Стеатит ТК-21	$\frac{0,58}{0,73}$; $\frac{0,54}{0,59}$; $\frac{0,57}{0,79}$; $\frac{0,59}{0,66}$	0,63; 0,56; 0,68; 0,64
5 » СК-1	$\frac{0,48}{0,58}$; $\frac{0,49}{0,71}$; $\frac{0,57}{0,63}$; $\frac{0,52}{0,64}$	0,53; 0,65; 0,61; 0,59
6 Муллито-корундовая керамика МК	$\frac{0,32}{0,24}$; $\frac{0,31}{0,41}$; $\frac{0,31}{0,38}$; $\frac{0,35}{0,44}$	0,38; 0,36; 0,35; 0,49
7 Корундовая керамика К	$\frac{0,13}{0,15}$; $\frac{0,15}{0,2}$; $\frac{0,14}{0,16}$; $\frac{0,13}{0,17}$	0,14; 0,17; 0,15; 0,15

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Table 4

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Hardness measurement ...

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Legend to Fig. 4:
1) Sandblast, 2) open porosity, %.

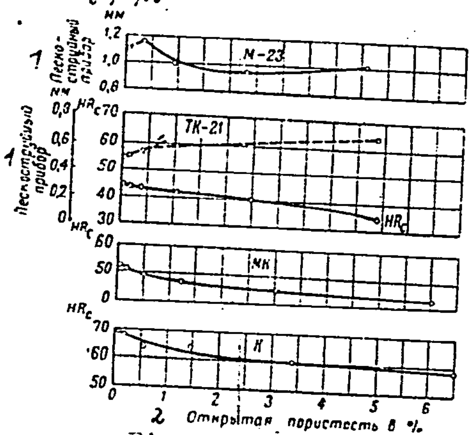

Fig. 4

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Legend to Table 5: a) Material, b) specific grinding productivity $q = Q_1/Q_2$, cm^3/cm^3; 1) to 7) cf. Table 1.

Материал	[illegible] производительность при шлифовании $q = \frac{Q_1}{Q_2}$ в $см^3/см^3$
1 Фарфор М-23	7,3; 7,0; 7,7
2 » 143	7,8; 7,4; 7,9
3 » ГФ	5,5; 5,2; 5,25
4 Стеатит ТК-21	3,3; 3,5; 3,6
5 » СК-1	3,0; 3,2; 3,0
6 Муллито-корундовая керамика МК	0,89; 0,93; 0,9
7 Корундовая керамика К	0,24; 0,25; 0,26

Table 5

S/137/62/000/007/019/072
A052/A101

AUTHORS: Budnikov, P. P., Nekrich, M. I.

TITLE: Some problems relating to the grinding of powders (A review)

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 7, 1962, 46, abstract 7G320 ("Poroshk. metallurgiya", no. 6, 1961, 17 - 26; English summary)

TEXT: The laws regulating the crushing of solids at grinding and the energy consumption for grinding are discussed. Some modern crushing appliances are reviewed: vibration and jet grinders, grinding appliances based on the electrohydraulic effect principle. There are 39 references.

R. Andriyevskiy

[Abstracter's note: Complete translation]

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24722
S/072/61/000/007/001/002
B105/B206

15.2230

AUTHORS: Budnikov, P.P., Academician AS Ukr SSR, Kantor, Ya.M.

TITLE: Efficient grinding method for products from highly aluminous ceramics

PERIODICAL: Steklo i keramika, no. 7, 1961, 29-32

TEXT: Research results of the determination of efficient methods for precision machining of highly aluminous products are given here. This is necessary since ceramic products cannot be formed to exact dimensions. In order to obtain products with exact dimensions from ceramic materials of great hardness (according to the Mohs hardness scale, over 9, and according to Khrushchov, over 1000 kg/mm^2), these must be ground mainly in a fired state by means of diamond grinding tools involving high cost. In this connection, the technology of double firing and grinding of products was elaborated as follows: The ceramic products were first heated up to partial sintering, and grinding off part of the material was made possible with customary grinding wheels of green silicon carbide. Afterwards, the products were fired up to total sintering and ground to size with diamond

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24722
S/072/61/000/007/001/002
B105/B206

Efficient grinding method ...

grinding tools. The test was made with two high-frequency materials: mullite-corundum ceramics of the type MK (MK) and corundum ceramics of the type K (K). Samples from these ceramics were made by means of injection molding and fired at various temperatures, their water absorption, weight of unit volume, apparent porosity, linear shrinkage, hardness and static bending strength being determined. The change of shrinkage, hardness and static bending strength of the ceramic samples MK and K as a function of firing temperatures was also mentioned. The properties of the ceramic samples are further investigated in close temperature ranges, i.e., for MK from 1200 to 1260°C at intervals of 20°C, and for K from 1380 to 1460°C at firing temperatures of 1380, 1410, 1435, and 1460°C. Impact strength rigidity, specific grinding productivity, and microstructure were also determined. The change of static and impact-strength rigidity, hardness on a sandblasting device, specific grinding productivity as a function of the open porosity in % (see Fig.2) and of the firing temperature in degrees (see Fig.3) is also shown. Fig.4 shows the comparative diagram for physical properties and specific grinding productivity of the samples MK and K for double and single firing, from which it follows that double firing does not change the main characteristic values of the sintered,

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highly aluminous ceramics. It is finally stated that, compared with single firing, double firing of MK and K does not change the modulus of elasticity, thermal stability and coefficient of linear expansion. In the microstructure of the materials, no noticeable changes are observed either. The technology of double firing for the manufacture of highly aluminous ceramic products with exact dimensions permits the use of carborundum grinding wheels, beside diamond tools, for grinding off part of the material. There are 4 figures, 2 tables and 1 Soviet-bloc reference.

2ʹ:722

S/072/61/000/007/001/002
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Efficient grinding method ...

Legend of Figs.2 and 3: (1) Hardness on sandblasting device, mm; (2) specific grinding productivity, cm^3/cm^3; (3) impact-strength rigidity, $kg.cm/cm^2$; (4) static rigidity, kg/cm^2; (a) open porosity, %; (b) firing temperature, °.

Fig. 2

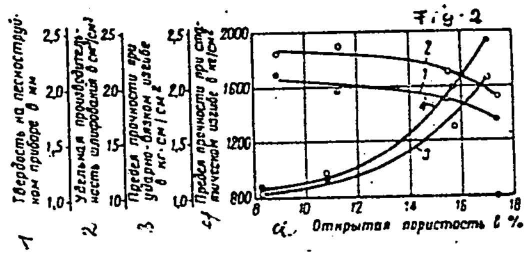
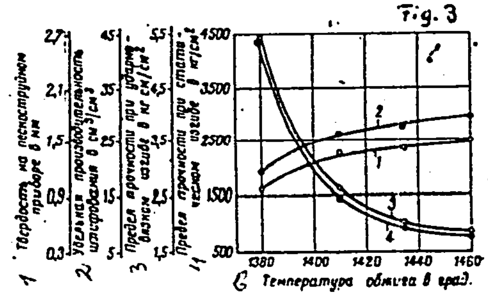


Fig. 3



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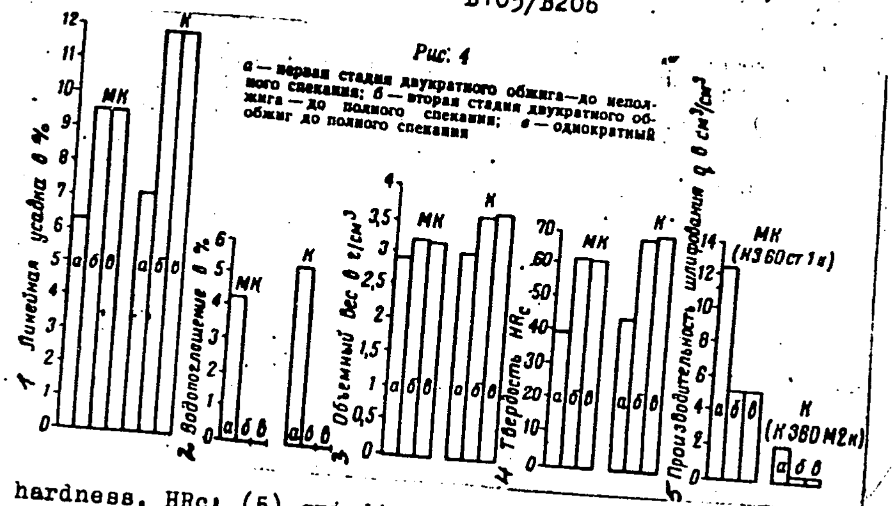
Efficient grinding method ...

24722

S/072/61/000/007/001/002
B105/B206



Legend of Fig.4: (a) First stage of double firing up to incomplete sintering; (б) second stage of double firing up to complete sintering; (в) single firing up to complete sintering; (1) linear shrinkage, %; (2) water absorption, %; (3) weight of unit volume, g/cm³; (4) hardness, HRc; (5) grinding productivity, cm³/cm³.

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28250 G/005/61/000/009/001/003
D029/D109

15.2630

AUTHORS: Budnikov, P.P., and Tresvyatskiy, S.G.

TITLE: Methods of high-temperature thermo-analysis of oxide systems

PERIODICAL: Silikattechnik, no. 9, 1961, 396-398.

TEXT: Static procedures such as the quenching method according to Belyankin, D.S., Lapin, V.V., and Toropov, N.A. (Ref. 1: The physical-chemical systems of silicate technology, 2nd revised edition, Moscow, Promstroiisdat. 1954) or the cone fall point method have found wide application for the investigation of phase diagrams of highly fire-resistant oxides. The fall point method is easily applicable although the diagrams obtained must be considered fusibility diagrams under given test conditions rather than phase diagrams of the systems examined, according to Balyankin, D.S., Lapin, V.V., and Toropov, N.A. (Ref. 1.). The quenching method allows reliable results only if the test material forms glass on rapid cooling. If, however, the material has a high crystallization velocity and does not form glass on quenching, results according to the quenching method are not always reliable. The authors describe a

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high-temperature thermo-analysis which is largely free of the mentioned shortcomings. The method is simple, reliable and permits the determination of solidus and liquidus temperatures of well crystallizing melts of highly fire-proof oxides in the temperature range of 1500° - 2400°C with an exactness of ± 10°. The method is suitable for material which does not react with molybdenum under purified helium, argon or nitrogen. Such substances are: BeO, MgO, CaO, SrO, Al_2O_3, La_2O_3, and oxides of the rare earths, SiO_2, ZrO_2, ThO_2, UO_2. The method cannot be recommended for systems containing oxides which are reduced at high temperatures or which, in molten stage, react with molybdenum, such as oxides of cobalt, iron, nickel, etc. The arrangement of the thermoelements in the furnace, the construction of the furnace, and the device for the mounting of the thermoelement are shown in Fig. 2. The upper part of the furnace was closed during the test with a special hood according to Budnikov, P.P., Tresvyatski, S.G., Kushakovski, V.I., (Ref. 5: Lecture #2193 at the 2nd International Conference of the UNO on Peaceful Application of Atomic Energy, Geneve, 1958) for the feeding and distribution of the shielding gas. The hood was not used at the beginning

2?250
G/005/61/000/009/001/003
D029/D109

Methods of high-temperature ...

in accordance with Tresvyatski, S.G., Kushakovski, V.I., Belevantsev, V.S. (Ref 4: Ogneupory (1960) no. 4, p 180-181). Satisfying results without hood were, however, obtained only if the solidus and liquidus temperatures were at 2,000°C or below. An electronic compensation recorder EPP-09 with scale up to 10 mV was used for recording the heating and cooling curves. Such curves are usually recorded with a paper feeding speed of 6 mm/min. The tests were conducted with a cooling and heating velocity of 20 - 80 degr/min. It seems important to stress the following facts: On recording by an electronpotentiometer the thermoelement is grounded through the circuits of the apparatus. It is therefore necessary to isolate the furnace and secondary coils of the transformer against the ground potential. If this is omitted, parasite electromotive forces appear in the thermoelement circuit, produced by the thermo-ion and thermo-electron emission at high temperatures. This parasitic EMF distorts the results of the recorder. The switching-on and the breaking of the heating circuit must have no influence on the compensation recorder. The whole arrangement thermoelement - potentiometer was calibrated according to the melting points of pure fire-proof

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compounds. For this purpose the following values were established: $MgAl_2O_4$ = 2135±25°C; Al_2O_3 = 2050±10°C; $3Al_2O_3 \cdot 2SiO_2$ = 1900±10°C; Mg_2SiO_4 = 1860±20°C; $CaAl_2O_4$ = 1600±5°C; $MgSiO_3$ = 1563±2°C; CaF_2 = 1410± 10°C; $MgO \cdot CaO \cdot 2SiO_2$ = 1391±3°C. Chemically pure initial oxides were used for the production of binary and ternary compounds. The described method can be used successfully for the investigation of phase diagrams of metals, mixtures of metals and oxides, carbide, boride and similar systems. In such cases, however, the molybdenum plate must be coated with a metal oxide, a high-temperature enamel or a similar substance in order to avoid its melting and fusing with the substances tested. There are four figures and 5 Soviet-bloc references.

ASSOCIATION: Chemical-technological Institute ".D.I. Mendeleyev", Moscow

BUDNIKOV, P.P., akademik; PANKRATOV, V.L., inzh.

Hydraulic activity of monocalcium silicate and helenite. Nauch. soob. NIITSementa no.11:28-32 '61. (MIRA 15:2)

1. AN USSR (for Budnikov).
(Slag)

29396

15.2230

S/131/61/000/011/00?/002
B105/B101

AUTHORS: Budnikov, P. P., and Zvyagil'skiy, A. A.

TITLE: Sintering of beryllium oxide

PERIODICAL: Ogneupory, no. 11, 1961, 525 - 530

TEXT: The authors investigate the effect of mineralogical and physico-chemical factors on the tendency to cake of beryllium oxide for the manufacture of dense ceramic products. Beryllium hydroxide with a content of 98.7 % BeO, and MgO and CaO admixtures served as initial material. The experiments were conducted at temperatures between 900 and 1700°C in intervals of 200 and 100°C. Shrinkage, water absorption, specific gravity, weight by volume, porosity, refractive index, dimensions of crystal grains, total specific surface, degree of chemical activity during dissolving in acid and alkali, adsorption properties, and dynamics of losses in weight as a function of calcination temperature, were investigated. The effect of admixtures of hydroxides and slightly glowed BeO on the ceramic properties, and the effect of plasticizers (7 - 10 % paraffin wax, 7.5 % starch solution, 5 % $BeCl_2$ solution) were studied. Optimum tendency to cake is

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S/131/61/000/011/001/002
B105/B101

Sintering of beryllium oxide

obtained by: (1) preceding glowing of beryllium hydroxide at 1350 - 1500°C; (2) production of BeO with maximum specific gravity; (3) preceding grinding of the calcined BeO up to an average grain size of below 2 - 3μ with structural defects of the grains; (4) use of 20 - 30 % material in hydrate- and low-temperature calcined form, respectively; (5) use of plasticizers to insure homogeneity; (6) high specific molding pressure; (7) prolonged exposure at final firing temperatures for recrystallization. Elevated firing temperature of beryllium oxide results in internal rebuilding, change of physicochemical properties, shape and dimensions of crystals, consolidation and solidification, sintering and recrystallization. There are 5 figures, 6 tables, and 8 references: 6 Soviet-bloc and 2 non-Soviet-bloc. The three references to English-language publications read as follows: E. Ryschkewitsch. Microstructure of Sintered Beryllia. Trans Brit. Cer. Soc., 1960, v. 59, no. 8; R. E. Lang and H. Z. Schofield. Beryllia, Reactor Handbook v. 4. Materials, USA, Geneva, 1955; F. H. Norton. Journ. Amer. Cer. Soc., 1947, v. 30, p. 242.

Card 2/2

18 9500 (1043, 2808, 3009, 3309) 3209

21.2300

25314

S/020/61/138/005/014/025
B103/B215

AUTHORS: Budnikov, P. P., Corresponding Member AS USSR, and Shishkov, N. V.

TITLE: Observations of the crystallization of beryllium oxide from the gaseous phase

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 5, 1961, 1093-1094

TEXT: The authors obtained growing single crystals of beryllium oxide, BeO, from the gaseous phase in argon atmosphere at atmospheric pressure, 1900°, 1800°, and even 1600°C. They put compact, semicrystalline BeO (purity 99.9 %) into a hollow graphite block which was kept in the furnace for 10 hr at constant temperature. The growing BeO crystals formed on the inner side of the lid of the graphite block which was 10-50°C cooler than the sample. They were 5 mm in size and mainly platelet- and rod-shaped. The latter form often grows in groups in one direction forming columnar concretions. Normally, short, hexagonal prisms of 100·100 μ, at most, occurred. The growth of the crystal from the gaseous phase is assumed to be due to the condensation of substance on its tip. The formation of

X

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dendritic ramifications and so-called "whiskers" is characteristic of the growth of BeO crystals from the gaseous phase. Contrary to G. K. Khardi (Hardy) (Ref. 3: Uspekhi fiziki metallov (Progress in metal physics), 3, M., 1960), the authors assume that ramifications and "whiskers" grow at a certain angle with primary crystals: 60, 90, and 120°. This corresponds to the crystallization of one branch in the direction of the a-axes of the primary crystal cell. Some BeO crystals become opaque due to a carbon film (evaporated from the graphite block). So far, the type of carbon has not been explained. The formation of Be_2C is impossible, since this reaction only takes place above 1950°C. The initial stage of carbon deposition on thin platelets is characteristic: in transmitted light, the thin C film forms a pattern whose main element is an equilateral triangle (side: $1 - 5 \cdot 10^{-4}$ cm) analogous to the surface of the hexagonal packing consisting of elementary tetrahedrons (e.g. MO_4^{6-}) (Ref. 4: B. F. Ormont, Struktury neorganicheskikh veshchestv (Structures of inorganic substances), 1950). The authors assume this C film to reflect the crystal relief and the electron-microscopic replicas. A second, less probable cause of the formation of powder patterns may be the selective C adsorption by certain sections of the plane single crystal surface. Usually, the rows formed by

C deposited on the BeO surface are parallel to the c-axis, sometimes they form a 30° angle with the crystal axis. In the latter case, the branch grows perpendicular to the geometric axis of the plate. The above mechanism of crystal growth is confirmed by the fact that the growth of a branch is not mechanically impeded. In this case, a shapeless mass grows. BeO single crystals forming in the above way are very strong and withstand considerable elastic deformation without breaking. According to E. Rischkewitsch (see below), the bending strength of "whiskers" is 150,000 kg/cm^2. The authors therefore consider the above method of producing oxide crystals to be very promising if a method of accelerating growth is found which regulates condensation at high temperatures. There are 2 figures and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: Ref. 2: E. Rischkewitsch, Trans. Brit. Ceram. Soc., 59, 8, 303 (1960).

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D. I. Mendeleyeva (Moscow Institute of Chemical Technology imeni D. I. Mendeleyev)

X

BUDNIKOV, P.P., akademik; KUZNETSOVA, I.P., inzh.

Effect of calcium sulfate on the process of mineral formation in portland cement clinker. Nauch. soob. NIITSementa no.12:1-7 '61. (MIRA 15:7)

1. Moskovskiy Ordena Lenina khimiko-tekhnologicheskiy institut im. Mendeleyeva, 2. AN USSR (for Budnikov).
(Cement clinkers) (Calcium sulfate)

BUDNIKOV, P.P.; BRON, V.A.; KHOROSHAVIN, L.B.

Dicalcium silicate and its properties. Trudy MKHTI no.36:15-43 '61. (MIRA 15:7)

(Silicates)

S/539/61/000/036/001/001
D408/D307

AUTHORS: Budnikov, P.P. and Savel'yev, V.G.

TITLE: The synthesis of monobarium aluminate and some of its properties

SOURCE: Moscow. Khimiko-tekhnologicheskiy institut. Trudy. no. 36, 1961. Issledovaniya v oblasti tsementa i vyazhushchikh veshchestv, 44-51

TEXT: The authors describe the synthesis of monobarium aluminate ($BaO \cdot Al_2O_3$) by roasting carefully mixed stoichiometric quantities of finely ground $BaCO_3$ and Al_2O_3 at 1350 and at 1500°C. The reaction was completed in the least time at the higher temperature. From the results of chemical and X-ray analyses and microscopic examination it was concluded that the product produced at 1500°C was practically single-phased, whereas that produced at 1350°C contained a small amount of a second phase. The normal consistency, initial and final setting times, and the compression strengths after hardening both in air and in the presence of moisture, for periods

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varying from 3 days to 6 months, were compared for pastes made from the materials produced at the two temperatures, and the rate of hydration, temperature change while hardening, and the shrinkage characteristics were determined for a paste made from $BaO \cdot Al_2O_3$ produced at 1500°C only. In order to determine the strength characteristics the aluminate samples were mixed with sand in the ratio 1:3, slaked with a quantity of water equal to 10% of the total weight of solids, and compressed at 400 kg/cm^2. The rate of hydration was determined from the amounts of combined water after hardening for periods varying from 1 hour to 14 months, shrinkage was determined by Nekrasov's method, and the change in temperature while hardening was measured in a thermos calorimeter. From the experimental results it was shown that the strength characteristics of $BaO \cdot Al_2O_3$ in air are approximately the same as those of $CaO \cdot Al_2O_3$. The $BaO \cdot Al_2O_3$ is not hydraulically stable, and it hydrates very rapidly. There are 5 figures and 6 tables.

BUDNIKOV, P.P.; SAVEL'YEV, V.G.

Effect of crystal priming agents on the strength of portland cements. Trudy MKHTI no.36:52-58 '61. (MIRA 15:7)
(Cement clinkers)

BUDNIKOV, P.P.; KUZNETSOVA, I.P.

Role of calcium sulfate in obtaining quick-hardening belite-alumina cement based on unconditioned bauxite. Trudy MKHTI no.36:129-134 '61. (MIRA 15:7)
(Cement--Testing) (Calcium sulfate)
(Bauxite)

BUDNIKOV, P.P.

Expanding aluminum cement based on Chinese bauxite. Trudy MKHTI no.36:135-143 '61. (MIRA 15:7)
(Cement--Testing) (China--Bauxite)

BUDNIKOV, P.P.; NEKRICH, M.I.

Some problems of powder grinding. Porosh.met. 1 no.6:17-26 N-D '61. (MIRA 15:5)

1. Moskovskiy ordena Lenina khimiko-tekhnologicheskiy institut imeni Mendeleyeva.

(Powder metallurgy)

BUDNIKOV, P.P., akademik

"Works by D.I. Mendeleev in the field of the chemistry of silicates and of the vitreous state" by V.P. Barzakovskii and R. B. Dobrotin. Reviewed by P.P. Budnikov. Zhur. VKHO 6 no.2:226-227 '61. (MIRA 14:3)

(Silicates) (Barzakovskii, V.P.) (Dobrotin, R.B.)

S/063/61/006/006/003/006
A057/A126

AUTHORS: Budnikov, P. P., Academician, Belyayev, R. A.

TITLE: Systems with beryllium oxide and their practical application

PERIODICAL: Zhurnal vsesoyuznogo khimicheskogo obshchestva imeni D. I. Mendeleyeva, v. 6, no. 6, 1961, 629 - 635

TEXT: A review of investigations on systems of beryllium oxide with other oxides is presented. These systems containing beryllium oxide became important because of various valuable properties. Beryllium oxide is the best matrix for uranium dioxide and thorium dioxide. Porcelain wares containing BeO have outstanding heat resistance properties. Also many different glass types contain BeO, as for instance the well known "Lindemann glass" which is especially suited for x-rays. Production of these glasses started in the USSR in 1931. BeO-containing glasses can have very different properties, such as a high dispersion factor, a small refraction index, good transparency for ultraviolet rays, high resistivity to water or chemical agents, etc. Two-, three-, four- and five-component BeO-containing systems are cited with short discussions and corresponding references. Among the five-component glass systems those published in the USA Patent 2, 584,

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Systems with beryllium oxide and... S/063/61/006/006/003/006
A057/A126

974-5, Feb. 12, 1952 and J. Loeffler, Verres et rifract, 8, no. 3, 138 (1954) were cited. There are 2 figures, 1 table and 89 references: 20 Soviet-bloc and 69 non-Soviet-bloc. The references to the 4 most recent English-language publications read as follows: P. Murray, Nuclear Power, May, 89 (1959); C. E. Weitz, A. van Valkenburg, J. res. nation. bureau stand., 64 A, no. 1, 103 (1960); R. A. Potter, L. A. Harris, Ceramic laboratory, Metallurgy div. Oak Ridge National laboratory, operated by Union Carbide Nuclear Co for the Atom. Energy Commissions, 1958; E. H. Hamilton, G. W. Cleek, J. res. bureau stand., 60, 693 (1958).

ASSOCIATION: AN USSR (AS UkrSSR)

Card 2/2

BUDNIKOV, P.P.; akademik; IVAKHNO, M.V., inzh.

Airtightness of binding materials based on lime and mineral additives. Stroi.mat. 7 no.5:32-34 My '61. (MIRA 14:6)

1. Akademiya nauk USSR, chlen-korrespondent AN SSSR (for Budnikov). (Binding materials)

BUDNIKOV, P.P.; ZHUKOV, A.V.; KAMENETSKIY, S.P.; POLINKOVSKAYA, A.I.; STRIZHEVSKIY, M.V.

Light and superlight articles based on perlite are introduced into mass construction. Stroi.mat. 7 no.8:8-15 Ag '61. (MIRA 14:8)

(Perlite (Mineral)) (Lightweight concrete) (Precast concrete construction)

BUDNIKOW, P. P., prof., dr [Budnikov, P. P.]

Scientific problems of cement chemistry. Cement wapno gips 16/26 no.7:183-186 '61.

1. Czlonek Akademii Nauk USRR, Czlonek korespondent Akademii Nauk ZSRR, Moskwa.

(Cement)

BUDNIKOV, P.P., akademik; KANTOR, Ya.M.

Measuring the hardness of ceramic material for electric and radio engineering. Stek.i ker. 18 no.5:18-24 My '61. (MIRA 14:5)

1. Akademiya nauk USSR (for Budnikov)
(Ceramic materials)

BUDNIKOV, P.P., akademik; KANTOR, Ya.M.

Efficient method of polishing ceramic articles with a high alumina content. Stek. i ker. 18 no.7:29-32 Jl '61. (MIRA 14:7)

1. AN USSR (for Budnikov).
(Grinding and polishing) (Ceramics)

BUDNIKOV, P.P., akademik; AZAROV, K.P.; LYUTSEDARSKIY, V.A.; MIGONADZHIYEV, A.S.; OMEL'CHUK, L.N.

Separation of gases in the interaction of phosphate enamels with aluminum. Stek. i ker. 18 no.12:23-24 D '61.
(MIRA 16:8)

1. Akademiya nauk UkrSSR (for Budnikov).
(Aluminum coating) (Phosphate coating)
(Gases in metals)

BUDNIKOV, P.P.; ZVYAGIL'SKIY, A.A.

Sintering of beryllium oxide. Ogneupory 26 no.11:525-530 '61.
(MIRA 17:2)

BUDNIKOV, P.P.; AZELITSKAYA, R.D.

Study of $3CaO.Al_2O_3$ hydration by the method of thermal analysis. Ukr.khim.zhur. 27 no.6:722-728 '61. (MIRA 14:11)

1. Moskovskiy khimiko-tekhnologicheskiy institut im. D.I. Mendeleyeva i Novocherkasskiy politekhnicheskiy institut.
(Calcium aluminate)
(Hydration)

S/080/61/034/003/001/017
A057/A129

AUTHORS: Budnikov, P. P., Marakuyeva, N. A., Tresvyatskiy, S. G.

TITLE: Effect of the composition of the binder on properties of mixes in hot-casting of ceramic products

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 3, 1961, 492-497

TEXT: The effect of the composition and amount of the binder on rheologic properties of alumina-containing ceramic mixes on paraffin-wax-stearin base binders with oleic acid admixtures was investigated. The quality of hot-cast ceramic products used in electro- and radio-ceramics and refractory materials depends on the cast mixes, which represent thermoplastic suspensions of a ceramic material in the binder. For the latter various thermoplastic organic materials with low melting point were used (paraffin, paraffin mixtures with wax or stearin, and oleic acid admixtures etc.). Studying the structural viscosity for rate gradients until 80 - 100 sec^{-1} and the casting ability of mixes furnished on fine-grade skeletons (mean grain diameter 1.5 μ) and paraffin-wax-stearin binders with oleic acid admixture, abnormal viscosity, i.e., thixotropy in stearin and paraffin-stearin mixes and dilatation in wax and paraffin-wax mixes was observed. In

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casting under pressure of 2-8 atm. mixes with a binder containing 85% paraffin, 12% stearin and 3% oleic acid had, due to thixotropy, a more than 1.5 times higher fluidity than the other mixes investigated. The last-mentioned composition of the binder is also recommended for casts with greater height (400 - 500 mm). The strength of casts containing 15% stearin in the binder is 20% lower in comparison to casts with a binder containing 15% wax. The present study on the important effect of composition of the binder on properties of mixes was made since few data are published in the literature related to this question, and no information at all is published on properties of fine-grade mixes (1 - 1.5 μ). In some investigations, as published by P. O. Gribovskiy (Ref. 1: Goryacheye lit'ye keramicheskikh izdeliy [Hot casting of ceramic products], Gosenergoizdat, M. [1956]), viscosity was determined with an Engler viscosimeter and thus abnormal changes in viscosity of highly concentrated suspension effected by changes in pressure were not observed. As structure-forming agent in the present investigations "koraks" N = 320 ground with water for 6 hours in a vibration mill was used. The grain size of the powder was determined turbidimetrically and was found to be: 50 - 40μ 5%, 40 - 30μ 4%, 30 - 20μ 11%, 20 - 10μ 21%, 10 - 5μ 25%, below 5μ 34%. Specific surface of the powder was 1.05 m^2/g, i.e., the mean grain diameter was about 1.5μ determined by the method of diluted air filtration described by B. V. Deryagin et al. (Ref. 5: Opredeleniye vneshney udel'noy poverkhnosti poristykh tel po metodu filtratsii razrezhennogo vozdukha (Determination of the external specific surface of porous materials by the method of filtration of diluted air), Izd. AN SSSR, M. (1958)). Homogenized paraffin was used as binder (melting point 53°), natural wax (softening point 48-52°C), and stearin (melting point 56°C). The latter was of the commercial grade and contained stearic, palmitic and oleic acid. Viscosity of the mixes was determined by a rotating viscosimeter (with inner rotating cylinder) of the Volarovich system (Ref. 6: Tr. Poligraph. inst. OGIZ [1937]), and the structural viscosity η, shear stress τ, and rate gradient D were calculated from corresponding formulae. Fluidity for casting conditions under pressure (2-10 atm), i.e., for rate gradients thousand times higher than measurable on the Volarich viscosimeter, was estimated by measuring the filling depth of a spiral-shaped cavity (4 x 4 mm) with the mix at 2, 4, 6, 8, and 10 atm. The strength of the casts was determined by torsion tests on rod-shaped test samples. Fluidity curves (Fig. 1) of mixes with 29 vol% binder show an abnormal character. The paraffin-base mix is similar to a Bingham system and near to a Newton's liquid, while the wax-base mix shows dilatation, i. e., an increase in the rate gradient effects an increase in structural viscosity. The stearin-base mix shows thixotropy. The effect of shear stress on structural viscosity of paraffin-, wax-, and stearin-base mixes is shown in Table 1. Curves on the effect of pressure on structural viscosity for mixes containing 8.5% of a two-component binder demonstrate a similar character of paraffin-wax-base and wax-base mixes, i.e., increase in structural viscosity with pressure. Paraffin-base mixes, on the other hand, are like stearin-base mixes showing thixotropy, i.e., decreased in structural viscosity with increasing pressure. This property is convenient for pressure casting. Curves on the effect of the composition of the binder on structural viscosity (Fig. 4) show for paraffin-wax base mixes a minimum at 25% wax content in the binder. Structural viscosity of paraffin-stearin-base mixes increases with the stearin content in the binder for a pressure range until 16,000 dyne/cm^2 (Fig. 4). Structural strength of casts decreases by adding stearin to paraffin-base binders. The optimum composition for pressure casting was found to be 85% paraffin and 15% stearin binders. The greatest strength is observed in casts based on paraffin-wax binders. Surface-active oleic acid decreases the structural strength, but has a positive effect on the fluidity of the mix. Optimum amount of oleic acid admixture is 3 weight % of the binder. Curves obtained for the casting ability of mixes under pressure (2-8 atm), estimated by the cavity-filling test, are linear and indicate that stearin-containing mixes have a much higher casting ability than paraffin- or paraffin-wax-base mixes in spite of the higher viscosity of stearin-base mixes measured on the viscosimeter. Thus it can be stated that structural viscosity data are insufficient for the selection of optimum composition if obtained only at small rate gradients. Also Engler's viscosimeter is not convenient for estimations of the quality of cast mixes. There are 7 figures, 2 tables and 6 references: 4 Soviet-bloc and 2 non-Soviet-bloc.

SUBMITTED: September 30, 1960

Table 1: Values for the structural viscosity of mixes at 80°C:

Type of binder in the mix	viscosity (poise) at shear stress (in dyne/cm²)			
	2,000	6,000	10,000	12,000
Paraffin	75	60	60	-
Wax	127	145	155	157
Stearin	3,000	1,080	520	320

BUDNIKOV, P.P. (Moskva)

Perlites. Priroda 50 no.5:55-56 My '61. (MIRA 14:5)

1. Chlen-korrespondent AN SSSR.

(Perlite)

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307310008-9"

S/020/61/137/002/014/020
B103/B215

AUTHORS: Budnikov, P. P., Corresponding Member AS USSR, Royak, S. M., and Dmitriyev, A. M.

TITLE: Composition of a binding agent hardening at high temperatures and pressures

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 2, 1961, 363-365

TEXT: At the Nauchno-issledovatel'skiy institut tsementa (Scientific Research Institute of the Cement Industry) the authors studied the technical properties of cement stone obtained from a mixture of belite (β-C_2S) and quartz sand when heated at 200, 250, and 300°C and 700 atm pressure in the years 1959-1960. Belite is the only mineral that hydrates slowly even at 200°C and 700 atm pressure, and forms weakly basic calcium hydrosilicates when mixed with high-silicate components. These are: tobermorite ($C_4S_5H_5$), xonotlite ($CSH_{0.18}$), and the hydrosilicate CSH(B). The authors previously showed that the above hydrosilicates are decisive for the commercial

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properties of cement stone. Using Tovarov's method [Abstracter's note: not described in the text] they crushed belite and quartz sand in ball mills up to specific surfaces of S = 2700 cm^2/g and S = 2000 cm^2/g and mixed them with water. The moment of binding was determined inside the autoclave at 200°C and 700 atm pressure by using a device described in Ref. 5 (A.I.Bulatov, Novosti neft. tekhn., neftepromysl. delo, no. 5 (1956). The time of the rise in temperature up to the previously determined point was less than 1 hr. The bending strength was measured 1 to 2 hr after the samples (2x2x2 and 4.4x16 cm) had been taken out of the autoclave, and the compressive strength of the two halves thus formed was determined. Thermograms were taken with Kurnakov's pyrometer. From these curves, the authors conclude that the samples of pure belite autoclaved for 24 hr, showed an endothermic effect (780°C) which proved the presence of hydrosilicate C_2SH (C). By adding the high-silicate component to belite, and exothermic effect is observed at 815-830°C on thermograms, which indicates the presence of hydrosilicate CSH (B) with a basicity of 0.8. In this case, no highly basic calcium hydrosilicate was detected in cement stone. Autoclaving for 48 hr showed similar results. Times of binding and strength of the samples differ considerably according to the percentage of the high-silicate component. An admixture of 20 to 50% somewhat accelerates the binding process, but causes a jumplike increase in the strength of cement stone (Fig. 2). Further increase in the content of the high-silicate component reduces strength and decelerates binding, since the optimum content of low-basic calcium hydrosilicates is "diluted". Long-lasting autoclaving (up to 7 days) does not reduce strength. Hence, the authors conclude that their statements on the stability of tobermorite, xonotlite, and CSH (B) at 200°C and 700 atm pressure (Ref. 2: DAN, 134, no. 3, 1960) are confirmed. There are 2 figures, 1 table, and 5 Soviet-bloc references.

SUBMITTED: December 12, 1960

Legend to Fig. 2:
1) Beginning of binding in hr and min. 2) End of binding in hr and min.
3) Compressive strength (1-3 after autoclaving at 200°C and 700 atm for 24 hr). 4) Compressive strength at 250° and 700 atm after 24 hr.
5) The same as 4, but at 300°C and 700 atm;
a) compression.

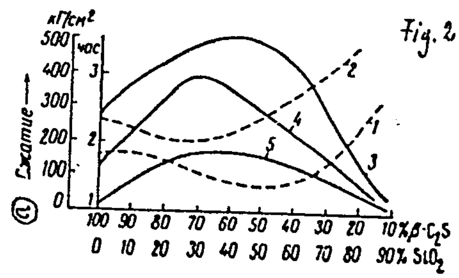

Fig. 2

S/020/61/137/002/014/020
B103/B215

Composition of a binding agent...

(1) № п. п.	(2) Состав смеси, % — (3) белитовый компонент β-C_2S	(4) кремнеземистый компонент	(5) Водоцементное отношение	(7) Начало схватывания	(8) Конец схватывания	(6) Прочность, кГ/см² — (11) Продолжительность автоклавирования, сутки (7): 1	2	3	7
				При 200° и 700 атм					
1	10	90	0,39	—	—	45/—			
2	15	85	0,39	2 ч. 40 м.	—	92/—			
3	20	80	0,39	2 ч. 20 м.	3 ч. 30 м.	143/—			
4	30	70	0,39	1 ч. 40 м.	—	303/—	63*/243	67*/235	90*/242
5	50	50	0,39	—	2 ч. 25 м.	513/—			
6	70	30	0,39	1 ч. 30 м.	2 ч. 05 м.	484/—			
7	80	20	0,39	1 ч. 50 м.	2 ч. 10 м.	—			
8	100	0	0,4	1 ч. 45 м.	2 ч. 23 м.	288/—			
				При 250° и 700 атм					
9	15	85	0,39	—	—	59/—			
10	30	70	0,39	—	—	166/—			
11	50	50	0,39	—	—	271/—			
12	70	30	0,39	—	—	398/—			
13	100	0	0,4	—	—	138/—			

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Composition of a binding agent...

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Πри 300° и 700 ати

14	10	90	0,39	1 ч. 40 м.	2 ч. 20 м.	26/—		
15	15	85	0,39	1 ч. 30 м.	1 ч. 55 м.	43/—		
16	20	80	0,39	1 ч. 20 м.	1 ч. 42 м.	77/—		
17	30	70	0,39	1 ч. 00 м.	1 ч. 20 м.	112/—	24*/103	50*/170
18	50	50	0,39	—	—	146/—		
19	70	30	0,39	—	—	168/—		
20	100	0	0,4	—	—	28/—		

Legend to Table 1: 1) Number of experiment. 2) Composition of the mixture. a) Belite component. b) Silicate component. 3) Water: cement ratio. 4) Beginning of binding. 5) End of binding. 6) Strength, kg/cm^2; numerator: bending strength; denominator: compressive strength. 7) Days of autoclaving.

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15 2210 3009, 3209, 3309

S/020/61/138/002/021/024
B103/B220

AUTHORS: Budnikov, P. P., Corresponding Member AS USSR, Keshishyan, T. N., and Yanovskiy, V. K.

TITLE: Influence exerted on the sintering of spectroscopically pure magnesium oxide by the admixture of some cations

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 2, 1961, 365-368

TEXT: The authors studied the sintering of spectroscopically pure MgO and the influence exerted by slight admixtures of cations of various crystallochemical characteristics. These were Fe^{3+}, Zr^{4+}, Sc^{3+}, and Ni^{2+}, the radii of which differ but slightly from that of Mg^{2+}. In the opinion of the authors, the results of other investigations regarding the above influence are not reliable, since they concerned substances having a high percentage of admixtures (up to 0.5 %). The slight amounts of admixtures to spectroscopically pure MgO, which were used by the authors, surpassed the admixtures contained in the initial MgO by a multiple, but were small enough to be dissolved completely in MgO. In order to reduce the

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influence of the kinetics of dissolution of the admixtures as far as possible and to ensure their uniform distribution on the surface of and inside the periclase grains, all admixtures were introduced by coprecipitation as hydroxides from mixtures consisting of solutions of magnesium chloride (20 %) and the corresponding admixture Table 1 shows data concerning the concentrations of cations of the admixtures in atom% allowing for the yield in MgO. The precipitates were filtered and roasted at 625°C. By roasting, the activated form of MgO was obtained. The MgO thus obtained was compressed into disks (diameter 11 mm, thickness 1 to 2 mm) under a pressure of 1350 kg/cm^2 and sintered twice: at 1320 and at 1600°C. Based on the shrinking of the specimen along its diameter and on the weight of unit volume the degree of sintering was checked. From Table 1 it is evident that even small amounts of admixtures (from 0.1 atom% onward) accelerate the sintering. Another type of MgO, chemically pure, shows a qualitatively different behavior as compared to the spectroscopically pure MgO. The latter begins to sinter at 1300°C, whereas the chemically pure MgO is sintered already completely at 1300°C. The microstructure of the specimens shows that no appreciable recrystallization of MgO occurs at 1320°C in case of practically complete sintering of the MgO with admixture of 0.2 to 0.5 % Zr^{4+} cation or other admixtures. At 1600°C, however, a considerable recrystallization takes place. 0.1 % of Zr cations increases this recrystallization substantially. The size of the MgO crystallites is not influenced by the quantity of the admixture, but the amount of the intercrystallite substance increases. Fig. 3 shows the dependence of the weight of unit volume and the apparent porosity of the specimens on the Fe^{3+} concentration. Based on this fact, the authors conclude that Zr^{4+} and Sc^{3+} are far less effective than Fe^{3+} in the initial stage of sintering. For sintering at 1600°C, however, one obtains a much stronger compression by large admixtures of Sc^{3+} and Zr^{4+} than by admixtures of Fe^{3+} or Ni^{2+}. It is assumed that the highly polarizable cations Fe^{3+} and Ni^{2+} having a mobile 18-electron shell influence the surface diffusion of the active and very fine-grained MgO, which prevails at the beginning of sintering, more intensely than the cations of Zr^{4+} and Sc^{3+}. The latter have the structure of inert gases and exert a stronger influence on the volumetric diffusion which is of large importance in the final stages of sintering, after the formation of closed pores. The authors conclude from the fact that the curve shows a maximum for the admixture of Fe^{3+} (Fig. 3) that there must exist an optimum concentration

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Influence exerted on the sintering of... S/020/61/138/002/021/024
B103/B220

of the admixtures for the acceleration of MgO sintering. The authors doubt that such a strong dependence of the sintering process on admixtures of 0.1 atom% may be explained by macroscopic flow (Ref. 7), since a retardation of the sintering is more likely to be expected for high temperatures. The considerable influence of the relatively insignificant amounts of admixtures on the progress of the sintering of spectroscopically pure MgO and the easily ascertainable difference in their type of action illustrate the obvious relation between the crystallochemical characteristics of their cations and their relative effectiveness. The authors infer from their results that the active MgO may be considered as being really pure only if the amount of admixed cations having a higher charge and polarizability than those of Mg^{2+} does not surpass 0.05 to 0.01 %. The theoretical density of a sufficiently pure MgO can be obtained almost at 1320°C by introduction of 0.2 to 0.5 atom% Zr^{4+}. There are 3 figures, 1 table, and 7 references: 2 Soviet-bloc and 5 non-Soviet-bloc. The three most recent references to English-language publications read as follows: Ref. 2: J. W. Nelson, I. B. Cutler. J. Am. Ceram. Soc., 41, no. 10, 406 (1958); Ref. 5: L. M. Atlas. J. Am. Ceram. Soc., 40, no. 6, 196 (1957); Ref. 7: A. E. Gorum, W. J. Luhman, J. A. Pask. J. Am. Ceram. Soc., 43, no. 5, 241 (1960).

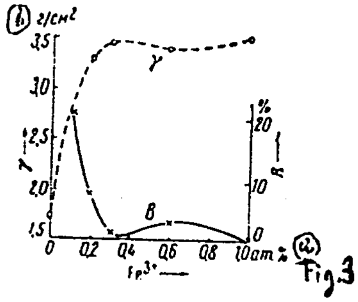
Card 4/6

23838
S/020/61/138/002/021/024
B103/B220

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D. I. Mendeleyeva (Moscow Institute of Chemical Technology imeni D. I. Mendeleyev)

SUBMITTED: January 16, 1961

Fig. 3:
a) atom%
b) g/cm².



ROYAK, S.M.; SHNEYDER, V.Ye.; BUDNIKOV, P.P., nauchnyy red.; KRYZHANOVSKIY, V.A., red. izd-va; SHMAKOVA, T.M., tekhn. red.

[Industry's requirements as to the quality of mineral raw materials] Trebovaniia promyshlennosti k kachestvu mineral'nogo syr'ia; spravochnik dlia geologov. Moskv , Gosgeoltekhizdat. No.52. [Cement raw materials] TSementnoe syr'e. 1962. 82 p. (MIRA 15:7)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo syr'ya.

(Cement)

BUDNIKOV, P.P., akademik, red.; CHEREPANOV, A.M., kand. tekhn. nauk, red.; MANUYLOVA, G.M., red.; POTAPENKOVA, Ye.S., tekhn.red.

[Cement; collection of translations from foreign periodicals] TSement; sbornik perevodov iz inostrannoi periodicheskoi literatury. Moskva, Izd-vo inostr. lit-ry, 1962. 217 p. (MIRA 16:4)

1. Akademiya nauk Ukr. SSR (for Budnikov).
(Cement)

BELYAYEV, Remir Aleksandrovich. Prinimal uchastiye DANILOV, Yu.I.; BUDNIKOV, P.P., akademik, red.; KALYUZHNAYA, T.P., red.; MAZEL', Ye.I., tekhn. red.

[Beryllium oxide, its properties and uses]Okis' berilliia; svoistva i primenenie. Pod red. P.P.Budnikova. Moskva, Gossatomizdat, 1962. 238 p. (MIRA 15:12)

1. Akademiya nauk Ukr.SSR (for Budnikov).
(Beryllium oxide)

BUDNIKOV, P.P., red.; BUTT, Yu.M., red.; KRAVCHENKO, I.V., red.; ROYAK, S.M., red.; KHOLIN, I.I., red.; GLEZAROVA, I.L., red. izd-va; GOL'BERG, T.M., tekhn. red.

[New developments in the chemistry and technology of cement]Novoe v khimii i tekhnologii tsementa; trudy. Moskva, Gosstroiizdat, 1962. 295 p. (MIRA 16:1)

1. Soveshchaniye po khimii i tekhnologii tsementa, Moscow, 1961.

(Cement)

PHASE I BOOK EXPLOITATION SOV/6202

Budnikov, P. P., Academician, Academy of Sciences UkrSSR, Corresponding Member, Academy of Sciences USSR, A. S. Berezhnoy, I. A. Bulavin, G. P. Kalliga, G. V. Kukolev, and D. N. Poluboyarinov.

Tekhnologiya keramiki i ogneuporov (Technology of Ceramics and Refractory Materials). 3d ed., rev. and enl. Moscow, Gosstroyizdat, 1962. 707 p. Errata slip inserted. 15,000 copies printed.

Ed. (Title page): P. P. Budnikov; Ed. of Publishing House: N. A. Gomozova; Tech. Ed.: G. D. Naumova.

PURPOSE: This book is a textbook intended for students taking courses in the technology of silicates at institutions of higher education.

COVERAGE: The book describes the physicochemical and mechanical properties of various ceramic and refractory products, including cermets, pure refractory oxides, glazes, aramic pigments, porcelain, and faience. The raw materials and methods of manufacturing ceramic

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and refractory products are reviewed. There are 167 references, mostly Soviet.

TABLE OF CONTENTS [Abridged]:

S/891/62/000/000/001/006
A057/A126

AUTHOR: Budnikov, P.P.

TITLE: Problems of the cement chemistry

SOURCE: Novoye v khimii i tekhnologii tsementa; trudy soveshchaniya po khimii i tekhnologii tsementa, 1961 g. Ed. by P.P. Budnikov and others, Moscow, Gosstroyizdat, 1962, 5 - 11

TEXT: In connection with the resolution of the Central Committee of the Communist Party of the USSR and the Board of Ministers of the USSR upon "Measures for an accelerated development of the cement industry in 1961 - 1965" a review of the main problems is given with short discussions. It is intended to increase the cement production in the USSR to 84.6 million tons in 1965, i.e. the 2.5 fold capacity of 1958. Of importance are investigations related to the theory of clinker formation, since this theory shows many essential shortcomings. Thus the composition of the iron content must be studied and the effect of various conditions of clinker formation upon methods of calculation of the mineralogical composition. For the production of cements with particular properties further

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physico-chemical studies of processes during calcination of the raw-mixture must be done. It is necessary to investigate the following problems: The effect of catalysts, the removal of solid bodies of singular atoms and molecules from crystal lattices before the formation of a new crystalline phase, and after addition of catalysts to the cement mixture, the accelerated calcination and quick cooling (heat transfer, removal of dust, etc.), hydration processes and cement setting. Moreover, investigations should be carried out on: The composition of liquid phases, cement solutions, the effect of alkalies, the role of aluminates and of calcium sulfate, the technology of quick-setting portland cement and other cements, the problem of activating blast-furnace slags and increase of hydraulic properties of slag cements, the study of micro-fillers and complex compounds (carboaluminates), the effect of carbonate rocks and nepheline wastes. Significant are also experiments upon the preparation of a new type of sulfatized belite-alumina cement by low-temperature calcination, as well as investigations related to the mechanism of growth and structure formation, crystallization, etc.

37232
S/131/62/000/005/003/004
B105/B138

24.2100

AUTHORS: Budnikov, P. P., Keshishyan, T. N., Yanovskiy, V. K.

TITLE: Method of measuring the electrical conductivity of ceramic materials at high temperatures

PERIODICAL: Ogneupory, no. 5, 1962, 226-230

TEXT: The authors have developed a comparatively simple and generally accessible method of, and designed the equipment for, measuring the electrical conductivity of solid substances up to 1600°C and more in a controlled gas medium. For this purpose they used an equal-arm alternating current decade bridge with frequencies of 1000 and 2000 cps, the МОМ-3(Еб-2) (MOM-3 (Ye6-2)) for direct current measurements, an Rh+PtRh (30%Rh) thermocouple, and the ПМС-48 (PMS-48) potentiometer with an М17/1 (M17/1) mirror galvanometer. The samples were pure oxides in the shape of disks, 6-10 mm diam and 0.5 - 1.5 mm thick. Analytically, the dependence of the thermo-emf of this thermocouple in the range from 0 to 1700°C may be represented as follows:

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$\varepsilon = 0.735t - 3.4 \cdot 10^{-4}t^2 + 1.46 \cdot 10^{-6}t^3 - 3.62 \cdot 10^{-10}t^4 \mu v$. Above $1500^\circ C$ ε may be expressed as: $\varepsilon = 4.909t - 3942 \mu v$. The authors' method was also used for studying the conversions in aluminous materials on heating in various gas media. The furnace, is described in detail. It is fixed to a stand, has two heating coils, and which can be moved in a vertical direction by means of a counterweight. There are 4 figures. The English-language reference reads as follows: A. Lempicki Proc. Phys. Soc. (London), No.400 B, 1953, 66.

ASSOCIATION: Khimiko-tekhnologicheskiy institut im. Mendeleyeva (Institute of Chemical Technology imeni Mendeleyev)

BUDNIKOV, P.P.; SAVELEV, V.G. [Savel'yev, V.G.]

Examination of the dehydration of the main refractory concrete component with the barium aluminate bond. Silikaty 6 no.4:329-334 '62.

1. Moskevsky radu Lenina chemicko-technologicky ustav jm. D.I. Mendeleeva, Moskva.

BUDNIKOV, P.P.; ALEKPEROV, M.S.; BAKLANOV, G.M.; BOLDYREV, A.S.; BOS'KO, K.D.; VOLZHENSKIY, A.V.; GROKHOTOV, N.V.; ZHUKOV, A.V.; ZABAR, L.B.; KITAYEV, Ye.N.; KOSHKIN, V.G.; KRUPIN, A.A.; MUROMSKIY, P.G.; POPOV, A.N.; SUKHOTSKIY, S.F.; USPENSKIY, V.V.; KHINT, I.A.; SHVAGIREV, M.P.; YUSHKEVICH, M.O.

Conference on increasing the durability of corrugated roofing sheets. Stroi.mat. 8 no.1:p.3 of cover Ja '62. (MIRA 15:5)
(Roofing)

BUDNIKOV, P.P.; GORSHKOV, V.S.

Phase conversions taking place during the production of aglo-
porites. Stroi. mat. 8 no.2:36-39 F '62. (MIRA 15:3)
(Concrete)

BUDNIKOV, P.P., akademik; KRYLOV, V.F., kand.tekhn.nauk; PANKRATOV, V.L., inzh.; ZLODEYEVA, V.S., inzh.

Using water and a trough to granulate blast-furnace slag. Stroi.mat. 8 no.7:30-34 Jl '62. (MIRA 15:8)
(Slag)

BUDNIKOV, P.P.; AZAROV, K.P.; GRECHANOVA, S.B.; SHCHERBAK, T.I.

Study of the process of expansion of perlite. Stroi.mat. 8 no.11:32-34 N '62. (MIRA 15:12)

(Perlite (Mineral))

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307310008-9"

BUDNIKOV, P.P., akademik (SSSR)

The tasks of porcelain industry and its automation in the Soviet Union. Sklar a keramik 12 no.4:95-97 Ap '62.

BUDNIKOV, P.P.; GURKO, I.T.

Effect of chromite feeding on the properties of dinas; dinas-chromite refractory material. Epitoanyag 14 no.3:87-89 Mr '62.

BUDNIKOW, P.P. (Budnikov P.P.) prof.dr. (Moskwa); PIETROWYCH, I.M. [Petrovych, I.M.] (Moskva); SAWIELIEW, W.G. [Savel'yev, V.G.] (Moskva)

A new method of synthesis of $3CaO \cdot SiO_2$ and research on the properties of the product obtained. Cement wapno gips 17 no.4:91-93 Ap '62

1. Czlonek rzeczywisty Polskiej Akademii Nauk, Warszawa, (for Budnikow)